

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte YUKIO NAKAJIMA

MAILED

AUG 12 2005

U.S. PATENT AND TRADEMARK OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES

Appeal No. 2005-0098  
Application No. 09/269, 972

ON BRIEF

Before GARRIS, WALTZ, and BARRY, Administrative Patent Judges.  
WALTZ, Administrative Patent Judge.

**DECISION ON APPEAL**

This is a decision on an appeal from the primary examiner's final rejection of claims 1 through 19, which are the only claims pending in this application. We have jurisdiction pursuant to 35 U.S.C. § 134.

According to appellant, the invention is directed to a tire design method useful in designing a tire by means of non-linear prediction, such as used by a neural network, allowing design of a tire to its optimum design for certain performance requirements (Brief, page 2). Further details of the invention may be gleaned

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from representative independent claim 1, which is reproduced below:

1. A tire design method comprising the steps of:

(a) determining a conversion system in which a non-linear correspondence between design parameters of a tire, which represent any one of a cross-sectional configuration of the tire including an internal structure and a structure of the tire, and performances of the tire is established;

(b) determining an objective function which expresses said performances of the tire and setting a constraint condition which constrains an allowable range of at least one of said performances of the tire and manufacturing conditions of the tire; and

(c) determining a design parameter of the tire, which gives an optimum value of an objective function, based on said objective function and said constraint condition by using the conversion system determined in said step (a) to design the tire based on the design parameter of the tire.

Appellant states that the claims stand or fall together in four proposed groupings (Brief, page 4). To the extent appellant presents specific, substantive arguments for the patentability of individual claims, we consider these claims separately. See 37 CFR § 1.192(c)(7)(2003); *In re McDaniel*, 293 F.3d 1379, 1383, 63 USPQ2d 1462, 1465 (Fed. Cir. 2002).

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The examiner relies upon the following references as evidence of unpatentability:

Kamegawa et al. (Kamegawa) 5,710,718 Jan. 20, 1998

Tang 6,061,673 May 09, 2000  
(filed Nov. 6, 1996)

Claims 1-7, 9-13 and 15-19 stand rejected under 35 U.S.C. § 102(e) as anticipated by Kamegawa (Answer, page 4).<sup>1</sup> Claims 8 and 14 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kamegawa in view of Tang (Answer, page 10).

Based on the totality of the record, including due consideration of appellant's arguments in the Brief and Reply Brief, as well as the examiner's arguments in the Answer, we affirm all of the rejections on appeal essentially for the reasons stated in the Answer and those reasons set forth below.

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<sup>1</sup>The examiner mistakenly lists the claims in this rejection as "[c]laims 1-6 and 9" (Answer, page 4). However, the examiner presents findings and conclusions of law for each of claims 1-7, 9-13 and 15-19 (Answer, pages 4-10); appellant correctly lists and argues the rejection of claims 1-7, 9-13 and 15-19 under section 102(e) over Kamegawa (Brief, page 4); and the examiner correctly lists the claims rejected in the action mailed Dec. 18, 2002 (Paper No. 11), as incorporated in the final rejection dated May 14, 2003, Paper No. 14, page 3. Therefore we hold this error harmless and consider claims 1-7, 9-13 and 15-19 as included in the rejection under section 102(e) over Kamegawa.

**OPINION**

**A. The Rejection under § 102(e)**

The examiner finds, with respect to the rejection of claim 1 on appeal, that Kamegawa discloses the three steps as recited in claim 1 (Answer, pages 4-5). Specifically, the examiner finds that Kamegawa discloses determining the objective function, constraint, and design variable (Fig. 2, element 102), as well as a continuous chevron-shaped mapping function that is non-linear, thus describing the first two steps of the claimed method (see Fig. 31A, Fig. 32A, and col. 10, ll. 25-29). Furthermore, the examiner finds that Kamegawa discloses the determination of the optimum value of the objective function, thus describing the third step of the claimed method (Fig. 2, element 116).

The principal argument advanced by appellant in the Brief is that Kamegawa does not disclose a conversion system in which a non-linear correspondence between parameters of a tire and performance of a tire is established (Brief, pages 8-9; see also the Brief, pages 5-8). Appellant argues that the genetic algorithms of the kind used by Kamegawa require tremendous amounts of experimental and computational time, while in contrast the claimed invention uses neural networks that permit "learning" in order to achieve a required performance level (Brief, page 5).

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Appellant also argues that the examiner has found that Kamegawa implies a non-linear objective function but the examiner has failed to provide supporting evidence for this finding from the art of record (Brief, page 6).

Appellant's arguments are not persuasive. The examiner, in the Answer (pages 4-5), has provided supporting evidence in the prior art of record (Kamegawa) that the reference describes non-linear objective functions (e.g., Figures 31A and 32A).

Appellant's argument regarding "neural networks" is not well taken since claim 1 on appeal does not recite any "neural network." Thus the limitations on which appellant relies are not stated in the claims, but it is the claims that define the claimed invention. See *Constant v. Advanced Micro-Devices Inc.*, 848 F.2d 1560, 1570-71, 7 USPQ2d 1057, 1064 (Fed. Cir. 1988).

In response to the Answer, appellant repeatedly requests that this Board reopen prosecution on the basis of one or more new grounds of rejection provided by the examiner's citation of Figures 31A and 31B of Kamegawa (Reply Brief, pages 1, 2 and 4). However, the jurisdiction of this merits panel of the Board rests with the review of rejections on appeal (see 35 U.S.C. § 134). Whether a rejection is a new ground of rejection is a petitionable matter, not an appealable matter. See *MPEP*,

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§ 1002.02(d) and § 1208.01, last sentence, 8<sup>th</sup> ed., Rev. 2, May 2004; see also §§ 706.01 and 1201.

In the Reply Brief, concerning the merits of the rejection regarding claim 1 on appeal, appellant argues that Kamegawa deals with the optimization of a solution space having an extreme value (as per appellant's Figure 8), while in contrast the present invention relates to the optimization of a solution space having multiple extreme values (as per appellant's Figure 9; Reply Brief, page 3). Appellant argues that it is "common knowledge" in this technical field that the term "linear optimization" refers to the optimization of a solution space having an extreme value whereas "non-linear optimization" refers to the optimization of a solution space having multiple extreme values (Reply Brief, page 3).

These arguments are also not persuasive. Appellant has failed to submit any evidence, much less convincing evidence, of this "common knowledge" regarding "linear and non-linear optimization." Furthermore, appellant has not pointed to any definitions or guidelines from their specification that support their argument.

With regard to the rejection of claims 3, 6 and 18, appellant argues that Kamegawa does not disclose a probabilistic

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conversion system or predictive functionality for reasons stated above (Brief, page 9). With regard to the rejection of claims 7, 13 and 19, appellant argues that Kamegawa fails to disclose the adaptive function as required by these claims (*id.*).

These arguments are not persuasive for the reasons noted above and in the Answer. We additionally note that an "adaptive function" is disclosed by Kamegawa (Answer, page 14, citing Figure 29A, element 206).

For the foregoing reasons, we determine that the examiner has established a *prima facie* case of anticipation which has not been adequately rebutted by appellant's arguments. Therefore, we affirm the examiner's rejection of claims 1-7, 9-13 and 15-19 under 35 U.S.C. § 102(e) over Kamegawa.

*B. The Rejection based on § 103(a)*

The examiner incorporates the findings from Kamegawa as discussed above with regard to claim 1 on appeal, further finding that claim 8 (and claim 14) on appeal adds the limitation to claim 1 (and claim 10) of using a "multi-layered feed forward type neural network" (Answer, page 10). The examiner cites Tang for the teaching of using "multi-layered feed forward type neural networks" to "obtain specified learning effects during a very short learning period" (Answer, pages 10-11). From these

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findings, the examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of appellant's invention to use the "multi-layered feed forward type neural network" of Tang in the method of Kamegawa to obtain the learning effects during a very short learning period (Answer, page 11).

Appellant argues that neither of the references provide any motivation for their combination (Brief, page 10), and that neural networks and optimization belong to different technological fields (Reply Brief, page 5).

These arguments are not persuasive for reasons well explained by the examiner on pages 14-15 of the Answer. We additionally note the disclosure of Kamegawa at col. 30, ll. 40-52, discussing the use of genetic algorithms in search, optimization and machine learning. Accordingly, we agree with the examiner that one of ordinary skill in this art would have been familiar with various artificial intelligence systems.

For the foregoing reasons and those stated in the Answer, we determine that the examiner has established a *prima facie* case of obviousness based on the reference evidence. Based on the totality of the record, including due consideration of appellant's arguments, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the

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meaning of section 103(a). Therefore we affirm the examiner's rejection of claims 8 and 14 under 35 U.S.C. § 103(a) over Kamegawa in view of Tang.

*C. Summary*

The rejection of claims 1-7, 9-13 and 15-19 under 35 U.S.C. § 102(e) over Kamegawa is affirmed. The rejection of claims 8 and 14 under 35 U.S.C. § 103(a) over Kamegawa in view of Tang is affirmed.

The decision of the examiner is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (2004).

**AFFIRMED**

*Bradley R. Garris*  
BRADLEY R. GARRIS )  
Administrative Patent Judge )  
(

*Thomas A. Waltz*  
THOMAS A. WALTZ )  
Administrative Patent Judge )  
(

*Lance Leonard Barry*  
LANCE LEONARD BARRY )  
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